

IN THE CLAIMS:

Please cancel claims 13 and 18 without prejudice or admission and amend claims 1, 6, 11, 14, 15, 17, 19, 21 and 23 as shown in the following listing of claims, which replaces all prior versions and listings of claims in the captioned application.

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1. (currently amended) A fingerprint reading device comprising:

an active matrix liquid crystal cell having a front surface facing a user and a rear surface opposing the front surface;

an illumination source for projecting a light from the rear surface to the front surface of the active matrix liquid crystal cell;

a flat light guiding plate having parallel opposed main faces disposed on the front surface of the active matrix liquid crystal cell for transmitting the light projected from the rear surface of the active matrix liquid crystal cell and deflecting light entering from the front surface toward a side end surface of the light guiding plate;

light receiving means on the side end surface of the light guiding plate for receiving the deflected light exiting from the side end surface of the light guiding plate; and

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a drive circuit for driving the active matrix liquid crystal cell to pinpoint-irradiate a fingerprint in contact with the light guiding plate by pinpointing with the light emitted from the illumination source and causing the light receiving means to pinpoint-receive the light reflected by the fingerprint to thereby obtain an image of the fingerprint.

2. (previously presented) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell comprises a liquid crystal cell of a liquid crystal display device.

3. (previously presented) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell is provided in superposition on at least a part of a liquid crystal cell of a liquid crystal display device.

4. (previously presented) A fingerprint reading device according to claim 1; wherein the light receiving means comprises a line sensor provided along the side end surface of the light guiding plate.

5. (previously presented) A fingerprint reading device according to claim 1; wherein the light receiving means comprises a light receiving element and one of a lens or a lens array for converging on the light receiving element the

light exiting from the side end surface of the light guiding plate.

6. (currently amended) A fingerprint reading method comprising the steps of:

providing an active matrix liquid crystal cell;

providing illuminating means for projecting light from a rear surface of the active matrix liquid crystal cell;

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providing a flat light guiding plate having parallel opposed main faces on a front surface of the active matrix liquid crystal cell opposite the rear surface for receiving the light coming from the rear surface and deflecting the received light toward a side end surface of the light guiding plate;

selectively pinpoint-irradiating a fingerprint touching a front surface of the light guiding plate through the active matrix liquid crystal cell with the light projected from the rear surface of the active matrix liquid crystal cell;

receiving the light reflected by the fingerprint and exiting from the side end surface of the light guiding plate; and

using the received light reflected by the fingerprint to obtain an image of the fingerprint.

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7. (previously presented) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell has a matrix of transparent electrodes driven by thin film switching elements.

8. (previously presented) A fingerprint reading device according to claim 7; wherein the thin film switching elements comprise one of thin film transistors, insulated gate field effect transistors, and thin film diodes.

9. (previously presented) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell has a resolution of about 300 dpi and a pitch between adjacent pixels of about 50 μm .

10. (previously presented) A fingerprint reading device according to claim 1; wherein the side end surface of the light guiding plate is disposed at a right angle with respect to the front and rear surfaces of the active matrix liquid crystal cell.

11. (currently amended) A fingerprint reading device comprising: a liquid crystal cell having a plurality of separately addressable pixels, a front surface facing a user and a rear surface opposite the front surface; a flat light guiding plate having parallel opposed main faces disposed over

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the front surface of the liquid crystal cell for transmitting the light projected from the rear surface of the liquid crystal cell and deflecting light entering from the front surface toward a side end surface of the light guiding plate;
an illumination device for projecting light from behind the rear surface through the front surface of the liquid crystal cell to illuminate a finger placed over the front surface; a light receiving device for receiving light reflected by the finger; and a drive circuit for sequentially driving the respective pixels of the liquid crystal cell to project light from the illumination device onto the finger so that an image of the finger can be obtained based on the reflected light.

12. (previously presented) A fingerprint reading device according to claim 11; wherein the liquid crystal cell comprises an active matrix liquid crystal cell.

13. (canceled)

14. (currently amended) A fingerprint reading device according to claim 11; ~~13~~; wherein the light receiving device is disposed adjacent to the side end surface of the light guiding plate for receiving the deflected light.

15. (currently amended) A fingerprint reading device according to claim 11; ~~13~~; wherein the light receiving

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device comprises a light receiving element and one of a lens and a lens array for converging on the light receiving element the light exiting from the side end surface of the light guiding plate.

16. (previously presented) A fingerprint reading device according to claim 15; wherein the drive circuit controls the liquid crystal cell by sequentially activating respective pixels thereof so that the light emitted by the illumination device is irradiated onto the fingerprint pixel by pixel and light reflected by the fingerprint is received by the light receiving device so that an image of the finger can be obtained.

17. (currently amended) A fingerprint reading device according to claim 11; 13; wherein the light receiving device comprises a line sensor provided along the side end surface of the light guiding plate.

18. (canceled)

19. (currently amended) A fingerprint reading device according to claim 11; 13; wherein the side end surface of the light guiding plate is disposed at a right angle with respect to the front and rear surfaces of the liquid crystal cell.

20. (previously presented) A fingerprint reading device according to claim 11; wherein the liquid crystal cell comprises a liquid crystal cell of a liquid crystal display device.

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21. (currently amended) A fingerprint reading device according to claim 11; wherein the ~~active-matrix~~ liquid crystal cell ~~comprises~~ is an active matrix liquid crystal cell comprising a first transparent substrate, a second transparent substrate, a spacer joining the first and second transparent substrates so that a gap is formed therebetween, a layer of liquid crystal material filled in the gap, and a plurality of pixel elements arranged in a matrix for altering the light transmission characteristics of the liquid crystal material.

22. (previously presented) A fingerprint reading device according to claim 21; wherein the pixel elements comprise a transparent electrode and an active switching element formed on one of the transparent substrates facing the liquid crystal material layer.

23. (currently amended) A fingerprint reading device according to claim 11; wherein the ~~active-matrix~~ liquid crystal cell ~~comprises~~ is an active matrix liquid crystal cell superimposed on a liquid crystal cell of a liquid crystal display device.

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24. (previously presented) A fingerprint reading device according to claim 11; wherein the liquid crystal cell has a matrix of transparent electrodes driven by thin film switching elements.

25. (previously presented) A fingerprint reading device according to claim 24; wherein the thin film switching elements comprise one of thin film transistors, insulated gate field effect transistors, and thin film diodes.

26. (previously presented) A fingerprint reading device according to claim 11; wherein the liquid crystal cell has a resolution of about 300 dpi and a pitch between adjacent pixels of about 50 μm .